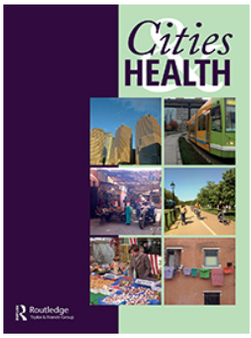

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Challenges for creating active living infrastructure in a middle-income country: a qualitative case study in Jamaica

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ABSTRACT

Walking and cycling infrastructure and quality open spaces ('active living infrastructure') can influence levels of physical activity and related risks of non-communicable disease. Understanding the challenges in creating active living infrastructure could help support the creation of more physically active communities. A qualitative study with nine semi-structured interviews was conducted with 10 expert stakeholders purposively sampled across the sectors of urban development, public health and civil society in Jamaica. Thematic analysis found that new active living infrastructure was challenging to provide because it did not fit with widely held views of 'development' which focused on road construction, driving and economics, not walking, cycling or nature. Public open spaces were lacking and the few good examples were expensive to maintain, deterring additional investment. Pedestrian infrastructure was poor quality and cycling infrastructure non-existent, making it dangerous for people to walk or cycle which particularly adversely affected people from deprived communities who may lack political voice. Greater collaboration between public health and urban planning, which appeared to be natural allies with shared interests, could help re-frame the multi-sectoral (including economic) benefits of active living infrastructure. Brokers may highlight problems associated with lack of active living infrastructure and also provide contextually relevant examples which go beyond generic international guidance.

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Introduction

The built environment can influence population levels of physical activity (McCormack and Shiell 2011, Sallis *et al.* 2016, Schipperijn *et al.* 2017, Kärmeniemi *et al.* 2018, Mölenberg *et al.* 2019). However, most of the literature about environmental facilitators for everyday physical activity, such as safe and attractive walkways and cycleways (Kärmeniemi *et al.* 2018, Panter *et al.* 2019) has been conducted in high-income countries, despite physical inactivity and associated health risks being global problems (Lear *et al.* 2017, Guthold *et al.* 2018).

International guidance, such as from the World Health Organization (2018a), promotes active urban environments as ways to tackle increasing levels of physical inactivity and associated diseases. Other resources, such as Sport England's Active Design principles (Sport England 2015) provide more detail about what physical features should be present to support active lifestyles. However, these socio-ecological determinants of health (Dahlgren and Whitehead 2007) are influenced by decisions in non-health sectors, particularly urban planning and transport, and guidance documents lack clarity about *how* to put such policies into practice. This is particularly important where cross-sectoral decision-makers are likely to have many competing interests which may result in gaps between policy and practice (Le Gouais *et al.* 2019).

This study aims to understand factors that limit the creation of walking and cycling infrastructure and open spaces ('active living infrastructure') in Jamaica, a middle-income country (The World Bank 2019) with low rates of physical activity – 33% of the population are classified as physically inactive and 24% as obese (World Health Organization 2018b). Non-communicable diseases are estimated to account for 80% of all deaths in Jamaica (30% from cardiovascular disease, 20% from cancers, 3% from chronic respiratory disease, 12% from diabetes and 9% from injuries) (World Health Organization 2018b). Recognising this problem, Jamaica adopted the Port of Spain Declaration on non-communicable diseases, committing to a range of multi-sectoral policy measures for non-communicable diseases prevention and control, including to 'promote policies and actions aimed at increasing physical activity in the entire population' (CARICOM 2007). Jamaican national policy for tackling non-communicable diseases states: 'Promote the building or improvement of parks, walking trails and other facilities to promote increased physical activity'

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(Ministry of Health 2013). However, like many countries, it struggles to create active living infrastructure in practice.

Jamaica shares a range of challenges that differ from high-income country settings in which research into environments supporting active living are typically conducted, for example, high levels of violent crime (The World Bank 2016), corruption (Transparency International 2019), poor road safety (World Health Organization 2016) and limited financial means for infrastructure investment and maintenance. Other issues which may differ include urbanisation (Central Intelligence Agency 2018), increasing car ownership (United National Environment Programme 2015) and climate challenges such as tropical rains and heat, including vulnerability to natural disasters. We were interested in exploring in what ways local policy and planning decision-making plays out at the backdrop of such challenges, in particular how different stakeholders use evidence and information in decision-making, including relatively generic international policy advice on creating active living infrastructure, alongside other influences. This can help to increase our understanding of the challenges of creating healthy, active living environments, not only adding to the burgeoning body of work from low- and middle-income countries, and the limited examples from the Caribbean (Cervero *et al.* 2009, Cunningham-Myrie *et al.* 2015, 2019, Giehl *et al.* 2016, Morgan 2019, Florindo *et al.* 2019), but increasing understanding about why progress is so limited in creating active living infrastructure more generally.

Method

Research design

We conducted a qualitative case study investigation (Baxter and Jack 2008) using semi-structured interviews to understand influences on decision-making for active living infrastructure in Jamaica. The instrumental case study design (Stake 1995) enabled us to explore the particular situation within Jamaica, focusing on the following research questions: a) How does evidence, information or data influence decisions relating to designing and building active living infrastructure? What else is influential? b) What opportunities are there to influence plans of new residential developments which affect walkability, cycling or open spaces? c) What evidence or data could support more effective planning of active living infrastructure across countries? These questions are closely related to a previous study in England (Le Gouais *et al.* 2019).

Active living infrastructure decision-making context

The urban planning system in Jamaica for active living infrastructure is a discretionary system with historical roots to the United Kingdom's Town and Country Planning Act (1947, 1957). Local planning policies ('Development Orders') guide development planning, alongside other material considerations, and public sector urban planners provide recommendations on planning applications to the planning authority. Appeals can be brought to the Minister who can overturn decisions. The planning system is fragmented, involving over 20 different organisations and 103 pieces of related legislation and the 'slow responsiveness of the system creates opportunities for the system to be bypassed or "corrupted"' (Planning Institute of Jamaica 2009). Public health does not have a statutory role in the planning process, despite potential health implications of design decisions. We initially focused the study on two (anonymous) of 14 local government areas ('parishes') in Jamaica, whose functions include development approval. However, we decided to expand the case under investigation to the whole country once it became apparent that many decision-makers were at national, rather than parish, level.

Participants

Nine semi-structured interviews were conducted with 10 expert stakeholders (two stakeholders from one entity participated in one interview) purposively sampled across the sectors of urban development (urban planners and architects), public health and from civil society (including running, cycling and neighbourhood organisations). Six were from urban development of whom one was involved with a neighbourhood organisation; three were from the health sector, of whom one had also been involved with a cycling organisation; and one was from a running organisation. The sampling criteria was defined in advance to provide diversity in stakeholder sample, alongside chain sampling (Creswell 2013) involving advice from local expert interviewees to identify participants from particular sectors and organisations. To protect the anonymity of interviewees in this relatively small policy setting, only broad umbrella terms are used to refer to interviewees' roles: 'urban development' or 'health' (which included the civil society organisation) and localities are not disclosed.

Data collection

Two initial scoping discussions were conducted by ALG, IG and a local research assistant (MM): one with an urban planning academic with experience

working with government, to understand the sector in Jamaica; and one with a senior police officer to understand the context of high levels of violent crime in Jamaica and potential implications for active living infrastructure.

Semi-structured interviews were conducted to allow for flexibility of questioning and to investigate emerging issues which were not identified a priori. They aimed to explore what influenced the design and construction of active living infrastructure in Jamaica, including how public health interacted with non-health sectors and the role of evidence, information and data. The original topic guide was piloted during the first two interviews to check contextual relevance and minor changes were made, mostly to improve the flow of questions (see Supplementary material).

All semi-structured interviews were conducted face-to-face at the participants' places of work, either by ALG or MM in February, March or July 2019 (ALG conducted the first two semi-structured interviews with MM as an observer; MM conducted the remaining interviews with ALG or IG as observers). All participants provided written informed consent and interviews were audio-recorded and transcribed verbatim. Interviews took an average of an hour (range 39–95 min).

Analysis

Thematic analysis (Patton 2002) was conducted by ALG, supported by qualitative analysis software NVivo 12 (QSR International Pty Ltd 2018). ALG conducted line-by-line coding of all interview transcripts, with one interview coded independently by CG to allow for discussion of codes. Analysis initially followed the research questions deductively but free inductive coding was also followed for unanticipated concepts to be included based on the data. Higher-level themes were developed to make sense of the data involving discussion between ALG, CG and IG. For added rigour, responses from different interviewees were compared with comments from the scoping discussions and a review of some relevant policy documents such as local development orders and the Jamaican national development plan (Planning Institute of Jamaica 2009, The Government of Jamaica 2017).

Results

We identified three main themes from the data: lack of public support for active living infrastructure due to conflict with aspirations for economic development; framing of issues associated with lack of active living infrastructure; and challenges of creating quality active living infrastructure.

Aspirations for 'development' and perceived lack of public support for active living infrastructure

Political focus on economic growth: jobs and housing

Stakeholders across all roles felt that active living infrastructure had little policy or public attention in Jamaica. Interviewees suggested there was political pressure for economic development related to road construction and private car use but not for walking and cycling. Interviewees indicated that the vision of 'development' being promoted in Jamaica was one of modern, high-rise blocks, focused on economic activity.

> *" … there is a big demand for apartments and for increased density and the prime minister is talking about Kingston being like the Miami Skyline kind a thing which is his vision of development … " – Urban development J02*

Interviewees discussed house building in popular higher-income neighbourhoods, with increasing density creating higher profits. Planning policy specified open space requirements in new developments (although these were only for residents and not publicly accessible). However, there was criticism that it was not always provided, or were very poor quality spaces. In some older communities, interviewees said that open space had historically been used for on-site sanitation but provision of modern piped sewerage removed this purpose. If assessed as 'surplus to requirements' policy allowed apparently 'useless' open space to be built on (National Environment and Planning Agency 2007).

Road construction was reportedly valued because it provided employment and 'people love roads' (Urban development J02). One interviewee thought that taxi drivers were a powerful lobby group against investment in mass transit (which may increase levels of physical activity (Xiao *et al.* 2019)) because 'they have a lot of power and there are a lot of them and it's their livelihood' (Urban development J02).

Some participants talked about a lack of will by decision-makers to support active living infrastructure, noting that 'the political will to get it done is crucial' (Health J08). There were examples given where decision-makers appeared to support infrastructure but '… it get shelved, by the will, the will is not there'. (Health J01).

Green spaces under-valued

Interviewees perceived the natural environment to be a low priority. They noted a common view of it as unkempt and vegetation often being removed during construction. Maintenance of open spaces was understood to be costly and demanding resources that the government did not have. On the other hand, some interviewees said that if quality open spaces were

provided people valued them. While commending the few high-quality public parks that existed, some interviewees mentioned the high cost of maintaining one particular park as the reason why others had not been built. Interviewees were unable to identify ministerial responsibility for green spaces and said that communities were likely to be given responsibility for maintaining their open spaces. However, several interviewees were concerned that this resulted in poor management and maintenance which could lead to degradation of quality and the spaces becoming unusable or attracting the homeless (squatting was estimated between 5% and 20% of the housing stock (Planning Institute of Jamaica 2009)).

> *" . . . what happen in a lot of communities is that the green space is not maintained and it becomes a safety hazard in and of itself and it's just become unusable. So it should have a field but the field is not cut so it's overrun with trees, sometimes there is garbage or you just have people lurking in the area." – Health J08*

Despite resource constraints, some urban development interviewees wanted new open spaces to be transferred to local government ownership, rather than to communities. Some, from the public sector, heralded public-private partnerships as a solution to overcome limited resources and failure of community-management. They indicated this could assist with both maintenance and with providing facilities within open spaces (e.g. running tracks or outdoor gym equipment). Interviewees said some private companies did this as corporate social responsibility and to raise their public profiles, but that wealthier areas were more likely to have this investment.

> *" . . . like say [high income area] they have you know a big open area. In fact, I hear now that they have gotten help to, isn't [company] or somebody has fix it up for them with running track and all kind of things." – Urban development J05*

Funding from the Ministry of Tourism was reported to be available for open spaces for up to 3 years, after which time places needed to be self-sustaining for ongoing maintenance through income-generation activities.

Nature was reportedly pushed out by construction – interviewees noted that road construction could remove vegetation which reduced walkability because footpaths were less likely to have trees which offered shade from the heat (also recognised in national planning policy documents (National Environment and Planning Agency 2007)). Interviewees reported some tokenism for tree planting but noted that without a budget for maintenance it was unlikely to be sustainable.

> *" . . . they get the budget for the road, they have absolutely no budget for any landscape and so it's like only roads . . . "- Urban development J02*

Infrastructure reducing safety

Interviewees indicated that active living infrastructure was generally not available to poorer members of society, reporting that pedestrian and cycling infrastructure were generally quite unsafe. Interviewees explained that high-income residents were increasingly putting up high walls around their homes to improve security but some interviewees believed this reduced safety for pedestrians as it impaired natural surveillance:

> *" . . . people put up these tall walls which happening a lot around here too, where you can't, it really makes you feel very insecure if you're on the street because you're not being overseen but I guess within your compound you feel safer" – Urban development J02*

Similar to other middle-income countries, road safety was highlighted as a problem (World Health Organization 2016, UNCTAD 2017). Interviewees noted tension between increasing traffic capacity in the name of economic development and resulting deterioration of road safety, restricting pedestrian movement and without provision of cycling infrastructure. Interviewees said that accidents raised the issue of safety in the public's consciousness but that this attention was not sustained. They said roads for cars were prioritised, for example, one urban development participant noted 'a politician is judged by the condition of the roads' (J02).

> *" . . . in an effort to widen the road and to ease the congestion for vehicular traffic, the sidewalks, and the people are saying now there are no place to walk . . . in the name of development and advancement I think sometimes . . . walking spaces are sacrificed . . . and persons with disabilities have significant challenges being able to just walk." – Health J03*

Lack of public voice and inequality of access to quality active living infrastructure

There appeared to be unequal access and demand for active living infrastructure from different socio-economic groups. Interviewees suggested that wealthier people drove (often long distances) to reach safe, well-maintained parks, had access to private open spaces within their compounds, or could pay to access places such as golf courses. In contrast, they reflected, people living in poorer communities had limited access to those resources.

> *" . . . [in poorer areas] persons play in the gullies because there are no formal parks or open spaces in their communities to play. We know that kids play on the streets, football, cricket all kinds of stuff" – Urban development J04a*

Interviewees considered recreational cycling as a wealthy person's activity because racing bicycles were expensive. They, however, acknowledged that poorer people often cycled for transport. They noted that

wealthier leisure cyclists mainly used the roads during weekends when it was quieter because it was dangerous cycling amongst traffic.

> *"There is nowhere to ride … there is no allowance made for cyclists on the road whether commuters or hobby cyclists … we have the drains in the side of the road, which we can't ride over but the cars won't give us space to go around them. There are potholes, there is glass … " – Health J08*

Interviewees said the lack of reliable public transport made this an unattractive option and people preferred to drive rather than walk or cycle because of the hot, humid climate, a desire for air conditioning and a lack of showering facilities at workplaces.

> *" … it's not our culture. Some people say 'Okay that is all well and good in the temperate countries where you can cycle to work.' Most people are moving towards wanting to acquire a motor vehicle that they can sit in a comfortable AC because of our climate and everything" – Health J03*

Interviewees noted that in higher-income communities streets were used for leisure activities: they said that early morning walking was common and felt safe, and that road running was an increasingly popular activity for the middle- and upper-classes. Interviewees said that people were less likely to walk for leisure in poorer communities because of the risk of crime.

Generally lobbying for active living infrastructure and related agendas was said to not be a priority for most people whose main concerns were on day-to-day survival.

> *" … the mass is more interested in bread and butter right now and that is a serious issue … the public don't have any money, it don't make any sense, all they have is one voice. And I don't see them demonstrating, I don't see that. Most cases when we have projects, they are thinking about employment." – Urban development J06*

Although it could be difficult to engage the public, urban development interviewees thought that community consultation for local planning policy development was useful. However, public consultation was unlikely for individual developments and some interviewees complained that development planning was opaque and even corrupt.

> *" … it is not very transparent. There is very little opportunity to see what's being proposed … I think it's a pretty corrupt system because somethings just fly through and no one, I mean I don't know how they got the permit over here." – Urban development J02*

Being able to influence politicians to lobby for a particular agenda appeared possible through informal access to decision-makers.

> *"I should influence the process, because the Prime Minister is a man that like to run, the Minister of Health he likes run. I see him this morning was exercising at [location] same like me, so the fact is that how can we show them … so let's try to influence the process" – Health J01*

Framing the problem

Behaviour change focus of public health

Public health professionals tended to focus on exercise-related behaviour change interventions rather than engaging with urban planning and transport sectors to support active living environments. Interviewees explained that the Jamaican health sector tended to focus on behaviour change campaigns, such as 'Jamaica Moves', a government initiative which included the promotion of physical activity, rather than engaging with urban planning or transport sectors to influence environmental determinants of health. Providing walking trails within communities was a health policy goal but it was reportedly not yet a focus for public health. Health sector interviewees recognised that 'health doesn't sit in the box of health, it has to be infiltrated into every sector' (Health J03), but interviewees talked about silos in government.

> *" … the Minister is all into getting people to exercise and things but it's not a big, you know it certainly doesn't show up in planning. So people still expect to get into a car and go somewhere … " – Urban development J02*

Some health sector interviewees were sceptical about providing cycling infrastructure because of the cultural change believed necessary to encourage cycling.

> *"I doubt that there's any intention of putting in cycling lanes and if you were to ask for that now, people would like 'What?', you know … [cycling]'s not our culture " – Health J03*

Interviewees explained that environmental impact assessments were conducted for new developments, but that this did not extend to wider health impact assessments. Notably poor air quality due to vehicle emissions was not raised as a concern during interviews, despite it being a problem in Jamaica (Planning Institute of Jamaica 2009).

Visionary urban planners

Urban development interviewees said they understood the health value of physical activity. They communicated ambition for promoting active living infrastructure, aligning with good place-making principles.

> *" … any planning guideline, anything at all they are encouraging walkable cities … … We talked about actually ensuring about the sidewalks … to make sure that people can walk. We spoke about actually putting in place facilities that encourage cycling … that they were age friendly … that people have rest stops along the way, ensuring that people can cross …*

ensuring we have proper landscaping" – Urban development J06

There was an apparent enthusiasm for learning amongst urban development interviewees although they noted that health was not formally included in their training. International case studies and information from other countries were discussed – one interviewee talked about planners from Colombia coming to Jamaica to share ideas. Another said that international best practice for active living infrastructure reached Jamaica from people studying or working abroad returning to the island. They said that sometimes international examples were difficult to adopt in Jamaica because of the cost. For example, an urban development interviewee (J06) discussed the replacement of wilting flowers in a park in Canada as being unachievable in Jamaica.

Urban planners expressed frustration that their role was advisory, rather than decision-making, therefore they often struggled to influence decision-making for active living infrastructure with either private sector developers or the Jamaican transport authority.

" . . . we can comment, but comment is different from approval because if you comment you can ignore right . . . [The Jamaican transport authority] and other people are going to be looking and saying 'listen . . . traffic is not moving freely.' So their position is widen the roads, right. But my position and what we're pushing is not that. Put in place mass transit. Try and densify certain urban areas, right. And actually close off certain roads . . . because the best form of mass transit by the way is walking you know" – Urban development *J06*

Difficulties of ensuring quality

Evidence and influence

We enquired about the use of evidence, information and data in influencing decision-making. This was purposefully kept broad to allow for individual interpretation of what this meant to people in varied sectors. The health sector interviewees discussed using academic evidence to inform policies, such as systematic reviews. They also used local data sources, such as the Jamaica Health and Lifestyle Survey (Minstry of Health & Wellness 2018), and international guidance, such as from the World Health Organization. It did not appear that public health professionals tried to use health evidence to influence other sectors such as urban planning or transport, and silos in government limited collaboration and knowledge sharing between sectors (although one health interviewee thought that collaboration was improving).

" . . . cycling lanes have been written into one of our [health] policies. However we have major construction of about three different road ways in [City] and none of them have taken cycling lanes into account. Zero of them . . . there is clearly a disconnect between maybe the Ministry of Transport, Works and whatever and the Ministry of Health. So the inter-sectorial collaboration, communication I think that's one, that would be one of the main pit falls." – Health J08

Some urban development interviewees thought that more information about healthy environments was necessary to lead to change.

"I believe as we understand more and realize how vital those are to the future health of the population I'm sure it will be something that would actually become part of the norm of operation . . . " – Urban development J04a

Many interviewees thought that framing issues of active living infrastructure and non-communicable diseases as economic problems could raise their profiles, demonstrating return on investment, and increase political concern because of the cost of ill health. However, it was also thought very challenging in practice to influence active living infrastructure decision-making on economic-health grounds.

Urban development interviewees thought that quality open spaces in high-end residential developments would increase house prices which could be evidence to present to developers to encourage provision of open spaces.

"I think it's market driven, because people now are becoming more health conscious, so you get to ask for a nicer price . . . especially because outside you have to consider safety. For example if you live in a gated community, . . . you can stay inside, in your community and be safe, that would be I think a major attraction to the market for purchase." – Health J08

Explicit policies and enforcement

Jamaica had a discretionary planning system and interviewees said that policies were often designed to be vague, allowing for flexibility. Whilst interviewees said that policies supporting active living infrastructure were present '. . . it's the follow through afterwards' (Health J08) that was challenging. Where requirements were specified interviewees complained they were not enforced and developers did not follow them. This was reportedly likely with private sector investors who focused on short-term profit.

" . . . you may find that they are not doing something they should have . . . it's pretty common. And especially where you have external investors, companies external to Jamaica, they don't always follow the rules. But I don't know if much happens afterwards." – Health J08

Easy to measure quantity metrics, such as space per dwelling, were criticised as 'tick box' exercises which did not account for quality. Volume house builders (private and public sector) reportedly maximised numbers on a plot to maximize profit and were criticised for 'not designing healthy communities they just designing things to make money' (Urban development

J07). One development stakeholder perceived politicians as not truly valuing urban planners and architects.

> *" … it's kind of an administrative exercise to check boxes … all they're doing is trying to control things according to density and not actually, I don't think considering the public realm at all … well it's a disastrous approach! … I think there is no recognition by the politician that you need this kind of [urban] planning" – Urban development J02*

International influence

A range of multilateral agencies, Non-Governmental Organisations and international companies working in Jamaica were discussed in the interviews. It appeared that international funding organisations could enable active living infrastructure, either directly through financing infrastructure, or indirectly through influencing government decision-making. One interviewee thought that multilateral agencies could raise standards and their involvement was the only way to ensure regulatory compliance.

> *"The only time I think that we actually as a country … comply with some regulatory framework is when the multilateral or lending agency requires it. They have specific international standards that you must abide by if you expect to get a grant or a loan." – Urban development J07*

However, some interviewees felt that Jamaica should develop its own standards, supported by international guidance, instead of adopting international standards. They noted that international advisors sometimes appeared to weaken government sovereignty and expressed concern that international advisors may not provide contextually appropriate solutions. One interviewee even wondered whether there was an element of racism, suggesting that international agencies did not trust Jamaicans.

> *" … the foreign donors do not in my estimation give even one-tenth of the money to the organizations that are run by non-whites or 'pass-for-whites'." – Urban development J05*

Interviewees said the government had limited budget for infrastructure and they discussed difficulties in funding that often resulted in plans being watered down or cancelled. One urban development interviewee said that international funding opportunities were being investigated. However, unsolicited foreign investment proposals were sometimes received, for example, for new transport networks, rather than via government calls for tenders, and interviewees said these proposals could be difficult for government to evaluate because of a lack of capacity.

> *"I know there have been talk of a light railway that some Chinese company came to the government wanting, but you know I was talking to someone in government and they say they don't have any way of accessing whether it's a good idea or not … They can come with an unsolicited proposal and you can take them up on it and borrow their money and build your railway but unless you know that it is something that would actually would make sense, hopefully they won't do it." – Urban development J02*

Discussion

Main findings of this study

We found that new active living infrastructure was challenging to provide because it did not fit with widely held views of 'development' which focused on road construction, driving and economics, not walking, cycling or nature. Public open spaces were lacking, particularly in poorer neighbourhoods, and the few good examples were expensive to maintain, deterring additional investment. Unsustainable community management was highlighted as a factor associated with poor quality or unusable public green spaces.

Pedestrian infrastructure was poor quality and cycling infrastructure non-existent, making it dangerous for people to walk or cycle which particularly adversely affected people from deprived communities who appeared to lack political voice. Silos in government limited collaboration and knowledge sharing between government departments. It appeared that urban developers were natural allies for public health given the health sector's need to promote active living, with an enthusiasm for good place-making seen among urban planners. However, the role of the public sector urban planner was often more advisory than decision-making.

Although policies were generally supportive of active living infrastructure, they were rarely followed, particularly by private sector investors who were noted to focus on short-term profit. Interviewees also discussed a lack of attention to the wider economic benefits of active living infrastructure related to health. Providing infrastructure in Jamaica may involve trade-off between international financial agencies and national government sovereignty. Whilst international financial agencies were identified as potentially raising standards, there was scepticism that they ensured contextually relevant solutions.

Findings in context

This study adds to the research about decision-making for active living infrastructure, demonstrating that stakeholders have multiple influences which go beyond health evidence, including local acceptability (McGill *et al.* 2015, Le Gouais *et al.* 2019).

On the surface, active living infrastructure may appear low in the hierarchy of needs for Jamaican

policy-makers (Maslow 1943, 1970). However, findings suggest complex tensions between active living infrastructure and aspirations for economic development. On the one hand, car travel and new housing are held up as signs of socio-economic advancement, with car ownership related to social status (Sangster 2019). On the other hand, pedestrian and vehicular traffic safety, active travel and quality green spaces are also noted as markers of economic development. As found in similar research in England, quantity of house building and private profit were facilitated rather than quality of place-making (Le Gouais *et al.* 2019). Income level was reportedly linked to use and perception of need for active living infrastructure – interviewees noted a prizing of green spaces and walkability especially among persons in middle and upper socio-economic groups.

Highlighting problems

There is increasing interest in understanding policy processes, with acknowledgement that influencing the political agenda is messy and nonlinear (Oliver *et al.* 2014, Cairney 2016). Kingdon's multiple streams framework (Kingdon 2010) provides a way to understand this. In his policy analysis framework, he suggested that *problems* need to be identified for attention; *policies* need to be available as solutions; and also supportive *politics* to act. When all three occur a 'windows of opportunity' is created, and so-called 'policy entrepreneurs' can offer solutions to decision-makers at these opportune moments. Our case study presented similar issues which help to explain challenges for creating active living infrastructure.

The problem of physical inactivity was widely recognised but the lack of active living infrastructure was not framed as a cause of that problem. Road safety and vehicle emissions were also rarely framed as issues needing attention. Green spaces and vegetation were seen as problematic due to maintenance costs and concerns about attracting homeless people. Therefore, the lack of active living infrastructure was not framed as a problem in and of itself. Knaggård argues that the multiple streams framework would benefit from inclusion of a 'problem broker', as someone who can help identify a problem in the first place (Knaggård 2015), unlike Kingdon's 'policy entrepreneur' who connects problems to policy and politics to identify solutions. We suggest this problem broker role appeared necessary to highlight the problems of inadequate active living infrastructure, including the wider economic impacts which could link to the more popular economic development agenda. Therefore re-framing transport problems as economic and health problems related to sedentary lifestyles, air quality and road safety (road crashes are estimated to cost low- and middle-income countries 5% of GDP (World Health Organization 2015)) could help to promote walking and cycling infrastructure, for example, using the World Health Organization's Health Economic Assessment Tool (World Health Organization Europe 2017) which calculates an economic value for new pedestrians and cyclists. However, Knaggård also acknowledged the importance of access to influential individuals, credibility and willingness in the knowledge broker role (Knaggård 2015), which may point to non-health actors to promote this agenda, for example, urban planning professionals, or influential individuals from other spheres, such as the health stakeholder who expressed enthusiasm to try to influence senior politicians with whom they socialised with.

Implementing policies and providing solutions

Supportive policies for active living infrastructure were generally present but were rarely implemented. For example, policy documents recognised the need for cycle paths for safety and to benefit disadvantaged groups, such as poorer women through travel time reduction (Ministry of Transport and Works 2007) and stating that cycling was a 'main mode of transportation'(The Government of Jamaica 2017). However, there was no cycling infrastructure. Lack of enforcement of developer obligations was recognised by the Planning Institute of Jamaica as resourcing problems (Planning Institute of Jamaica 2009).

Urban planners supported creating active urban environments, appearing to be natural allies with public health. The policy literature suggests that this could be an effective strategy, in particular, the advocacy coalition framework (Sabatier and Jenkins-Smith 1993) recognises that groups with shared sets of beliefs can work together to influence decision-making (Cairney 2012, Löblová 2018). However, it appeared that urban planners and public health actors may have shared sets of interests, rather than shared beliefs as the advocacy coalition framework suggests, since public health professionals relied more on academic evidence (associated with evidence-based medicine (Guyatt *et al.* 1992)) compared to urban planners who considered multiple influences in decision-making, including public opinion, international examples and established place-making principals. These differences in beliefs may go some way to explain the difficulties in collaboration between sectors, alongside fiscal challenges (Unwin *et al.* 2016), and limited recognition of mutual benefits from active living infrastructure such as quality place-making, tackling congestion, and increasing physical activity, all of which can provide economic benefits. It appeared more challenging for the transport sector to recognise these shared interests, as they prioritised private car-focused road-widening strategies, which is not unusual in low- and middle-income countries (Goenka and Lee 2017).

Urban planners' enthusiasm to support active living infrastructure potentially suggested this group as Kingdon's 'policy entrepreneurs' to provide solutions to decision-makers, although their advisory nature

provided few 'windows of opportunity' (Kingdon 2010). International agencies may also have potential to act as 'policy entrepreneurs' and encourage active living infrastructure.

Relying on community-management for open spaces was problematic, as has been found with public goods in other sectors, such as water supply (Lockwood and Le Gouais 2015). Open spaces were required to be financially self-sustaining, but this appeared to potentially exacerbate inequality if poorer areas are unable to do this and relying on housing developers for provision limited access to the general public. Findings suggest that it is important to test assumptions that public-private-partnerships solve long-term maintenance and management issues. Increasing perceived value of open spaces by local people may help leverage funding by demonstrating multi-functional purposes, as well as designing in crime prevention measures (Police Crime Prevention Initiatives 2019), to mitigate cycles of poor maintenance, quality and use.

There is a growing body of evidence about associations between urban environments and physical activity (McCormack and Shiell 2011, Sallis *et al.* 2016, Schipperijn *et al.* 2017, Kärmeniemi *et al.* 2018, Mölenberg *et al.* 2019), including from middle-income countries like Jamaica (Cunningham-Myrie *et al.* 2015, 2019). However, lack of clarity about mechanistic pathways, which is a challenge in cross-sectional studies (Cunningham-Myrie *et al.* 2015, Panter *et al.* 2019) adds to the challenges of influencing active living infrastructure design and more research with natural experiments could be beneficial (Ogilvie *et al.* 2019), particularly in middle-income countries to investigate transferability between contexts. Clearer evidence on the economic impacts of active living infrastructure within low- and middle-income countries could also demonstrate value and encourage the health sector to diversify from individual behaviour change strategies (Lachat *et al.* 2013) to approaches that tackle the upstream determinants of physical activity. Contextually relevant examples could also help address concerns that active living infrastructure is too difficult, especially for cycling. However, other transport policy research has found that socio-political issues, rather than simply geography, affects which international examples are influential, such as the case with South Africa's bus rapid transit system which looked to South America for inspiration (Wood 2015). Therefore, clearer understanding of where examples should be drawn from to influence active living infrastructure decision-makers appears necessary.

Gaining political support

Active living infrastructure decision-making appeared to be a political, rather than a technical decision, therefore scientific evidence alone is unlikely to be highly influential (Boswell 2009). This points to the potential futility of following a evidence-based medical strategy (which public health may be inclined to do) to what is a complex, political problem (Cairney and Oliver 2017). Political support for active living infrastructure was lacking because aspirations for economic development did not account for the full value of active living infrastructure; deprived communities, who were likely to benefit most from new active living infrastructure, lacked political voice; there was challenge from the road building lobby, including the taxi lobby; and funding was limited, particularly for on-going management and maintenance. Physical inactivity and associated chronic non-communicable diseases may not have received the focus of disease outbreaks, such as Zika and Chikungunya (which were pressing issues at the time of the study), because conditions may need to deteriorate to crisis point before gaining political support for action (Kingdon 2010).

Research has highlighted the importance of political leadership for active living infrastructure creation in middle-income countries, for example, strong political will and clear policies helped facilitate high levels of cycling in Bogotá, Colombia (Rosas-Satizábal and Rodriguez-Valencia 2019), and strong leadership supported implementation of strategic plans involving active living infrastructure in Buenos Aires, Argentina (Kamrowska-Zaluska 2017). Influencing 'insiders' (Buse *et al.* 2012), who can lobby policy-makers, may be a useful strategy, however change can be slow, as described in the enlightenment concept within the advocacy coalition framework which suggests that a person's core belief are difficult to change and may be influenced slowly over many years (Sabatier and Jenkins-Smith 1993). Reframing the debate about the environment and physical inactivity could influence public opinion to support active living infrastructure, however, immediate economic issues are more pressing for many poorer people.

Limitations of this study

This small study undertaken with limited time and resources included key stakeholders across urban development and public health. A more in-depth research design would include more interviewees from other sectors (specifically, we were unable to include the transport sector), as well as politicians involved in planning decisions, the public or international actors, including regional stakeholders, such as The Caribbean Public Health Agency (CARPHA). More comprehensive policy analyses also often include a policy document analysis to complete an audit of the gaps between policy and practice.

The research was led by ALG from the United Kingdom, in close collaboration with researchers from Jamaica (IG and MM) throughout research design, data

collection and analysis. The research team were all from public health, although ALG also has a background in civil engineering; inclusion of other disciplines, such as transport, may have enriched the analysis and facilitated involvement of additional types of interviewee.

We also recognise the hierarchical complexities between researchers and participants. Jamaica's professional context is very hierarchical and interviewees held senior professional roles; the interviewers were relatively young but arguably privileged women, representing the University of Cambridge.

Conclusion

Active living infrastructure in Jamaica was challenging to create because it was of low priority, apparently conflicting with widely held views of economic development. Re-framing the debate to emphasise the health and non-health (including economic) benefits of active living infrastructure, including for road safety and congestion (versus just for physical activity), may be useful. Greater collaboration between public health and urban development sectors, who appear to be natural allies with shared interests, could help to emphasise the value of active living infrastructure, although they may need to overcome differences in beliefs on what should guide action. Brokers may be required to highlight multi-sectoral problems associated with a lack of active living infrastructure, to raise it as a political issue, and also to provide contextually relevant solutions which go beyond generic international guidance.

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Data availability statement

The data that support the findings of this study may be available on request from the corresponding author, ALG. The data are not publicly available due to the qualitative nature of the data – consent was not obtained for wider distribution of the interview data and there may be information which could compromise the anonymity of study participants.

Disclosure statement

No funder had any role in the study design; data collection, analysis, or interpretation; in the writing of the report; or in the decision to submit the article for publication.

Ethical approval

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